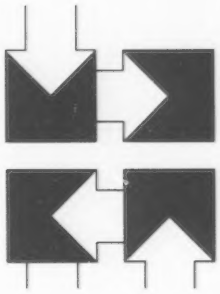
JOURNAL OF PROCESS CONTROL



Index to Volume 3 1993

Number 1 (February) 1–64
Number 2 (May) 65–136
Number 3 (August) 137–200
Number 4 (November) 201–256

Article index

Number 1

On-line optimization and control of a blast furnace stove rig
G. A. Labossiere and P. L. Lee 3
Trade-offs between design and control in chemical reactor systems
W. L. Luyben 17
Improved independent design of robust decentralized controllers
M. Hovd and S. Skogestad 43
Design of adaptive PID regulators based on recursive estimation of the process parameters
Cs. Bányász and L. Keviczky 53

Number 2

Truncated step response models for model predictive control
M. Hovd, J. H. Lee and M. Morari 67
A decentralized quadratic dynamic matrix control algorithm
G. N. Charos and Y. Arkun 75
Linear model predictive control of unstable processes
K. R. Muske and J. B. Rawlings 85
Optimization-based tuning of nonlinear model predictive control with state estimation
E. Ali and E. Zafiriou 97
Model predictive control of a continuous, nonlinear, two-phase reactor
N. L. Ricker 109
Experimental evaluation of a multivariable adaptive nonlinear predictive controller
J. D. Morningred, D. A. Mellichamp and D. E. Seborg 125

Number 3

Improvements in dynamic compartmental modelling of distillation columns
Z. W. Huang, Y. M. Xu, C. Z. Fang and J. Tang 139
Optimal control of biotechnological processes described by fuzzy sets
P. Angelov and S. Tzonkov 147
A semi-rigorous dynamic distillation model for on-line optimization and nonlinear control
S. Ganguly and D. N. Saraf 153
Creating efficient nonlinear neural network process models that allow model interpretation
G. M. Scott and W. H. Ray 163
Experiences with model-based controllers based on neural network process models
G. M. Scott and W. H. Ray 197

Number 4

Adaptive control of basis weight and moisture content for a paperboard machine
Qijun Xia, Ming Rao, Xuemin Shen and Heyun Zhu 203
Non-singular optimal control for fed-batch fermentation processes with a differential-algebraic system model
P.-C Fu and J. P. Barford 211
A time-delay control algorithm for an industrial electric heater
Jian Chu, Hongye Su and Xiehe Hu 219
Predictive temperature tracking for batch evaporative crystallizers: the partial state model reference approach
G. Févotte and J. P. Klein 225
Neural network synthesis for thermal processes
A. Spieker, K. Najim, M. Chtourou and J. Thibault 233
Unusual dynamics of a reactor/preheater process with deadtime, inverse response and openloop instability
B. D. Tyreus and W. L. Luyben 241

Book reviews 61, 135

Author index

Ali, E. 97
Angelov, P. 147
Arkun, Y. 75

Bányász, Cs. 53
Barford, J. P. 211

Charos, G. N. 75
Chtourou, M. 233
Chu, J. 219

Fang, C. Z. 139
Févotte, G. 225
Fu, P. -C. 211

Ganguly, S. 153

Hovd, M. 43, 67
Hu, X. 219
Huang, Z. W. 139

Keviczky, L. 53
Klein, J. P. 225

Labossiere, G. A. 3
Lee, J. H. 67
Lee, P. L. 3
Luyben, W. L. 17, 241

Mellichamp, D. A. 125
Morari, M. 67
Morningred, J. D. 125
Muske, K. R. 85

Najim, K. 233

Rao, M. 203
Rawlings, J. B. 85
Ray, W. H. 163, 179
Ricker, N. L. 109

Saraf, D. N. 153

Scott, G. M. 163, 179
Seborg, D. E. 125
Shen, X. 203
Skogestad, S. 43
Spieker, A. 233
Su, H. 219

Tang, J. 139
Thibault, J. 233
Tyreus, B. D. 241
Tzonkov, S. 147

Xia, Q. 203
Xu, Y. M. 139

Zafiriou, E. 97
Zhu, H. 203

Keyword index

Adaptive
Predictive control, Multivariable 125
Adaptive PID regulator
Time delay estimation, Recursive estimation 53
Adaptive control
Predictive control, Paperboard machine 203
Batch processes, Crystallization 225
Approximate models
Model predictive control, State estimation 67

Batch processes
Adaptive control, Crystallization 225
Blast furnace stove
Optimal control, Generic model control 3

Chemical reactor
Neural networks, Modelling 163
Compartmentalization
Distillation, Dynamic model 139
Constrained control
Model predictive control, Open-loop unstable processes 85
Crystallization
Adaptive control, Batch processes 225

Decentralization
Model predictive control, Dynamic matrix control 75
Decentralized control
Internal model control, Structured singular value 43
Predictive control, Nonlinear reactor 109
Differential-algebraic system
Fed-batch fermentation, Ethanol formation 211
Distillation
Dynamic model, Compartmentalization 139
Dynamic distillation model
On-line optimization, Nonlinear control 153
Dynamic matrix control
Model predictive control, Decentralization 75
Dynamic model
Distillation, Compartmentalization 139

Ethanol formation
Fed-batch fermentation, Differential-algebraic system 211

Fed-batch fermentation
Differential-algebraic system, Ethanol formation 211
Fuzzy mathematical programming
Optimal control, Fuzzy sets 147
Fuzzy sets
Optimal control, Fuzzy mathematical programming 147

Generic model control
Optimal control, Blast furnace stove 3

Industrial electric heater
Time-delay control algorithm, Model identification 219
Internal model control
Decentralized control, Structured singular value 43

Learning
Modelling, Neural networks 233

Mathematical analysis
Unusual dynamics, Reactor/preheater process 241
Model predictive control
Constrained control, Open-loop unstable processes 85
Model identification
Time-delay control algorithm, Industrial electric heater 219
Model predictive control
Approximate models, State estimation 67
Dynamic matrix control, Decentralization 75
Model-based control
Neural networks, Modelling 179
Modelling
Neural networks, Chemical reactor 163
Neural networks, Model-based control 179
Learning, Neural networks 233
Multivariable
Predictive control, Adaptive 125

Neural networks
Modelling, Chemical reactor 163
Modelling, Model-based control 179
Learning, Modelling 233
Nonlinear control
Predictive control, State estimation 97
Dynamic distillation model, On-line optimization 153
Nonlinear reactor
Predictive control, Decentralized control 109

On-line optimization
Dynamic distillation model, Nonlinear control 153
Open-loop unstable processes
Model predictive control, Constrained control 85
Optimal control
Generic model control, Blast furnace stove 3
Fuzzy sets, Fuzzy mathematical programming 147

Paperboard machine
Adaptive control, Predictive control 203
Predictive control
Nonlinear control, State estimation 97
Nonlinear reactor, Decentralized control 109
Multivariable, Adaptive 125
Adaptive control, Paperboard machine 203

Reactor control
Trade-offs 17
Reactor/preheater process
Unusual dynamics, Mathematical analysis 241
Recursive estimation
Adaptive PID regulator, Time delay estimation 53

State estimation
Model predictive control, Approximate models 67
Predictive control, Nonlinear control 97
Structured singular value
Decentralized control, Internal model control 43

Time delay estimation
Adaptive PID regulator, Recursive estimation 53
Time-delay control algorithm
Industrial electric heater, Model identification 219
Trade-offs
Reactor control 17

Unusual dynamics
Reactor/preheater process, Mathematical analysis 241